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SOURCE Meditsinskiy Rabotnik.USSR METHODS OF TREATING TRAUMATIC SHOCKProf S. Banaytis  
Leningrad

The first group of antishock measures to be applied establishes a protective action and involves taking advantage of the therapeutic effect brought about by an inhibitory or braking process, in accordance with I. P. Pavlov's teaching. This means that the patient must have absolute rest and that in cases where traumatic injury of the extremities is present, he must be immobilized. Sensory and psych'c reception must be lowered and the reaction of the nervous system toned down by administering morphine, alcohol, and soporific as well as narcotic agents. Finally, one must exert influence on the nerve paths by applying novocain blocks.

Antishock measures of the second group comprise parenteral administration (intravenously or subcutaneously) of antishock liquids and transfusion of blood (fresh citrate blood or preserved), or of products derived from blood, i. e., plasma or serum. One may especially recommend administration of M. G. Belen'kiy's species nonspecific serum (VNS). The effectiveness of VNS in shock is in no respect lower than that of preserved plasma or serum. In cases of severe shock accompanied by heavy blood losses, it is advisable to make intra-arterial blood transfusions. This treatment was used by V. A. Negovskiy during World War II and is being applied successfully by USSR surgeons at present.

The third group of measures includes methods which combat lowering of the temperature of the body by heating. The heating should be general rather than local, because expansion of blood vessels in some circumscribed part of the body, which has been produced by local application of a source of heat, will disturb blood circulation still further. While moderate heating is beneficial, overheating may have a harmful effect.

Although treatment of shock must be individually adapted to the condition of the patient, it is still advisable to standardize therapeutic antishock agents. This applies particularly to antishock liquids. During World War II, a number of liquids of this type (solutions for intravenous administration) was proposed by

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V. I. Popov, P. L. Sel'tsovskiy, I. K. Petrov, E. A. Asrat'yan, A. N. Filatov, and others. These liquids were applied successfully. The experience of military medicine, combined with experimental work and clinical observations, indicates that an antishock solution of the following composition has the best effect:

<u>Ingredient</u>	<u>Parts</u>
Alcohol (96°)	25.0
Glucose	25.0
Sodium bromide	2.0
Morphine (1%)	1.0
Distilled water	250.0

As far as indications for blood transfusion are concerned, they depend on the degree of shock, as well as the extent of blood losses. Light forms of shock can be treated without making a blood transfusion. When there is a medium degree of shock, blood transfusion is definitely indicated. It becomes absolutely indispensable in cases of severe shock. In cases of shock accompanied by low or moderate blood losses, the transfusion of 250-500 ml of blood, supplemented by the addition of 250 ml of plasma or of VNS, is sufficient. In shock accompanied by heavy blood losses, 500 ml of blood should be administered twice or three times, and these transfusions should be followed by giving more blood under application of the continuous drip method. It is advisable to combine blood transfusions with administration of plasma or VNS. However, one must remember that one should not, under any circumstances, introduce serum together with blood, these operations should always be carried out separately.

To arrive at a correct estimate of the extent of blood loss, the physician must take into account all clinical symptoms. Of great help in arriving at this estimate are data on the hemoglobin content, an erythrocyte count, and a determination of the specific gravity of blood. According to G. Barashkov, the specific gravity of the blood indicates the extent of the blood loss and can be used for determining whether a blood transfusion should be carried out or not.

Blocking of nerve paths with the aid of novocain has found wide acceptance in the therapy of shock. Credit for developing this method is due to A. V. Vishnevskiy. His method of the closed vagosympathetic cervical novocain block is one of the most effective methods of combating shock due to traumas of the chest or shock following surgical operations. No less important is novocain blocking of nerve paths in traumas of the extremities, particularly in open or closed fractures.

In closed fractures, a novocain block can be established either by introducing a 1/4-1/2 % novocain solution into the site of the injury (injection into the hematoma) or by applying Vishnevskiy's method of sheath blocking, which interrupts transmission of the pain sensation by the nerve and nerve conduction in general, at the level where novocain was injected. In open fractures, which are often accompanied by extensive damage to the fascial and muscle sheaths, it is preferable to use nerve conductor anesthesia. In such cases, novocain is injected into regions through which the main nerve trunks of the extremities pass.

Experience shows that blocking of nerve conductors can be successfully applied in fractures of the lower extremities. Thus, in fractures of the shin the nerve trunks can be blocked by a single novocain injection made immediately behind the capitulum fibulae. In cases of fractures in the lower or middle thirds of the hip, one may limit oneself to two injections of

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novocain into the regions through which the sciatic and the femoral nerves pass. In high fractures of the hip, it is impractical to carry out an injection into the n. obturatorius. Under the circumstances, a block of the type of an anesthetic injection into the hematoma is recommended.

Every hospital should have in stock drugs for the treatment of shock which have been prepared beforehand. This includes an 0.5% soln of novocain in 100-cc quantities, packaged in ampules, antishock soln (for intravenous administration) of the composition indicated above, packaged in 250-cc portions in ampules; and VES or preserved plasma in 250-cc portions, packaged in ampules. The antishock soln should be of two types: one with morphine and one without. The latter is used if the patient has received a morphine injection prior to arriving at the hospital.

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